

## A Peculiar New Genus of Locally Abundant Australian Thynninae (Hymenoptera: Tiphidae)

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*Abstract.*—The new thynnine tiphid genus *Hathynnus* Kimsey is described from southern and eastern Australia, based on the species *Thynnus pygmaeus* Turner (type of the genus), *Thynnus rubromaculatus* Turner, and 15 new species: *Hathynnus aestus*, *aquilonius*, *austrius*, *cardaleae*, *cobarensis*, *caros*, *eyrensis*, *fuscatus*, *moorensis*, *nanus*, *occidentalis*, *orarius*, *piligaensis*, *striatus* and *theros*. *Hathynnus rubromaculatus* (Turner) and *H. pygmaeus* (Turner) are new combinations.

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Turner (1910) placed *Thynnus rubromaculatus* Turner and *Thynnus pygmaeus* Turner among other species, in the genus *Asthenothynnus* Turner. *Asthenothynnus* was later synonymized under *Aeolothynnus* Ashmead by Brown (1997) and as discussed by Kimsey (1999). However, *rubromaculatus*, *pygmaeus* and several undescribed species lack a number of diagnostic features of *Aeolothynnus*, including, in the male, the ventrally grooved hypopygium, elongate apical prementum brush, nearly asetose stipes, vertex with red sub-lateral spot, and laterally notched pronotal carina. Females of these species lack a W-shaped transverse carina across the first metasomal tergum, lack an elongate tuft on either side of the epipygial plate and lack the accompanying tuft of setae on the adjacent sternum typical of *Aeolothynnus*. Thus a new genus, *Hathynnus*, is proposed for these species. Preliminary phylogenetic analyses of relationships among the Australian genera places *Hathynnus* as basal to the *Iswaroides* group of genera, which includes *Iswaroides* Ashmead, *Aspidothynnus* Turner, *Doratithynnus* Turner and *Epactiothynnus* Turner among other genera. Autapomorphies of *Hathynnus* include the elongate and strongly narrowed

female metasomal sternum VI, ligulate male hypopygium, odd laterally compressed and slender genital capsule, obsolescent gonobase, and arcuate penis valves.

*Hathynnus* does not show particularly close relationships to other thynnine genera, although it shares some apomorphies with *Arthrothynnus* Brown and *Chilothynnus* Brown. These three genera have the brushy basal labial palpomeres, and the gonobase reduced in *Arthrothynnus* and *Chilothynnus* to a narrow basal ring and in *Hathynnus* obsolescent, reduced to a narrow membranous rim. *Hathynnus* can be distinguished from these genera in the males by the ligulate hypopygium (apically or at least laterally dentate in *Chilothynnus* and *Arthrothynnus*), strongly laterally compressed male genital capsule, aedeagus with distinctive ventral expansion, ecarinate epipygium, obsolescent antennal lobes, cylindrical flagellomeres (versus arcuate), and in females by the narrow, impunctate pygidium and apical metasomal sternum. There is also a superficial resemblance to *Aeolothynnus* as the males and females of both taxa are small to tiny wasps, which can be found in great abundance on flowering *Eucalyptus*.

## MATERIALS AND METHODS

For the sake of brevity the abbreviation "MOD" is used for midocellus diameter and "PD" for puncture diameter as a measure of punctation density. Ocellocular distance is the minimum distance between the hindocellus and the closest eye margin, measured in midocellus diameters. The aedeagus in this group consists of a dorsal column with abbreviated apical "strap" or lobe, and ventral expansion that extends nearly the entire length of the aedeagus. The volsella lies across the base of the paramere and is narrowed medially, with an enlargement or lobe on the dorsal and ventral ends. Clypeal dimensions are measured by comparing the greatest width with the length measured medially from the dorsal margin to the apical margin. Finally, the interantennal distance is measured from the edge of the inner rims of the antennal sockets.

Type and non-type specimens were borrowed from and are deposited in the following collections: ADELAIDE—South Australian Museum, Adelaide, Australia (D. B. Hirst); BRISBANE—Queensland Museum, Brisbane, Australia (C. Burwell); CANBERRA—Australian National Insect Collection, CSIRO, Canberra, Australian Capitol Territory (J. Cardale); COLLEGE STATION—Entomology Collection, Texas A&M University, College Station, USA (E. Riley); DAVIS—Bohart Museum of Entomology, University of California, Davis, USA (S. L. Heydon); LONDON—the Natural History Museum, London, England (S. Lewis); MELBOURNE—Museum Victoria, Melbourne, Australia (Ken Walker); PERTH—Western Australian Museum, Perth (T. Houston); SYDNEY—Australian Museum, Sydney, New South Wales (M. Moulds). Type repositories are indicated by the city of the collection in parentheses following the type data.

*Hathymus Kimsey, new genus*

*Male*.—Body length 6–8 mm (Fig. 2). *Head* (underside as in Fig. 3): clypeus with

or without impunctate medial longitudinal carina or welt, apical truncation narrower than distance between antennal sockets; antennal lobes obsolescent; hypostomal plate large, with occipital and hypostomal carinae broadly separated; stipes arcuate, with short marginal fringe; basal palpal segments fringed, with dense erect setae; flagellum without tyloids, first and second flagellomeres less than twice as long as broad; vertex without red spot between hindocellus and eye. *Mesosoma*: pronotal disk with anterior margin marked by transverse swelling or broad ridge, ridge without sublateral indentation or notch; mesopleuron with scrobal sulcus present and extending across mesopleuron; propodeum sloping obliquely from metanotum to petiolar socket; coxae globular and finely setose; legs unmodified. *Metasoma*: tergum I about as broad as long, gently convex subapically, sternum I medially flat to convex; terga I–VI and sterna II–V with subapical transverse sulcus broadly U-shaped; terga III–V without subspiracular sulcus; epipygium with longitudinal medial impunctate band and impunctate convex apex; hypopygium ligulate (as in Figs. 32, 33). *Genital capsule*: strongly compressed laterally (as in Figs. 26, 27); gonocoxa dorsoapically produced into single lobe; gonobase (basal ring) obsolescent, remains broadly attached to gonocoxa in lateral view as narrow membranous rim; paramere apically rounded to subacute; aedeagus with short apical lobe and well-developed ventral expansion; volsella broad, with ventral and dorsal lobes; penis valve slender, narrowly tapering and apically acute or capitate, often bending strongly ventrally. *Color*: black to dark brown, with yellow to whitish, and orange or red markings.

*Female*.—*Mesosoma*: pronotal disk without medial sulcus; scutellum without anteromedial lobe; propleuron flat; forecoxae usually not separated by pit, except in *cobarensis*; metanotum obsolescent. *Metasoma*: pygidium elongate, parallel-sided and



Fig. 1. Distribution map of *Hathygnus* species in Australia.

usually narrow, apex narrowly rounded or truncate (Figs. 34–36); sternum VI 2–6× as long as wide at apex, apex narrowly rounded or truncate (Figs. 30, 31).

*Type species.*—*Thynnus pygmaeus* Turner 1908.

*Etymology.*—The generic name, *Hathygnus*, is a nonsense combination of letters added to the commonly used suffix in this tribe—"thynnus". The name is assumed to be masculine.

*Included species.*—*Hathygnus aestus* Kimsey, new species; *H. aquilonius* Kimsey, new species; *H. austrinus* Kimsey, new species; *H. cardaleae* Kimsey, new species; *H. cobarensis* Kimsey, new species; *H. earos* Kimsey, new species; *H. eyrensis* Kimsey,

new species; *H. fuscatus* Kimsey, new species; *H. moorensis* Kimsey, new species; *H. nanus* Kimsey, new species; *H. occidentalis* Kimsey, new species; *H. orarius* Kimsey, new species; *H. piligaensis* Kimsey, new species; *Thynnus pygmaeus* Turner, new combination; *Thynnus rubromaculatus* Turner, new combination; *H. striatus* new species, and *H. theros* Kimsey, new species.

*Distribution.*—The genus apparently occurs in all Australian states except Northern Territory and Tasmania (Fig. 1).

*Discussion.*—The most unusual external features of *Hathygnus* are the ligulate male hypopygium and the narrowed female apical metasomal segment. A similar con-

figuration of the male hypopygium is seen only in some South American genera including *Zeena* Kimsey and *Mesothynnus* Kimsey. Additional diagnostic features in the males include the absence of tyloids on the flagellomeres, flagellomeres less than twice as long as broad, strongly lat-

erally compressed genital capsule, aedeagus with reduced apical lobe and large ventral expansion, obsolescent gonobase and subspiracular sulcus restricted to metasomal terga I and II. Females have the apical metasomal sternum generally elongate and strongly narrowed apically.

#### KEY TO MALES OF THE SPECIES OF *HATHYNNUS*

- 1 Clypeus without medial longitudinal, impunctate carina or welt (Fig. 7) ..... 2
  - Clypeus with medial longitudinal, impunctate carina or welt (Figs. 4-6) ..... 6
- 2 Propodeal punctures contiguous and transversely striatiform above petiolar socket ..... 3
  - Propodeal punctures circular and separated by 1 PD or more above petiolar socket ..... 4
- 3 Face without pale markings, or pale markings restricted to small spots on vertex; paramere narrowly tapering and apically acute (Fig. 14); hypopygium broadly rounded apically, apicomediaally flattened or slightly indented ..... *eyrensis* Kimsey
  - Face extensively marked with white or yellow bands and spots along eye margins, on clypeus and vertex and above antennal sockets; paramere broad and apically broadly rounded (Fig. 23); hypopygium apicomediaally angulate or produced .. *striatus* Kimsey
- 4 Propodeum with medial yellow to pale yellow spot; ocellocular distance 3.5 MOD wide; paramere apically broadly rounded (Fig. 22) ..... *rubromaculatus* (Turner)
  - Propodeum without medial yellow to pale yellow spot; ocellocular distance 4 MOD wide; paramere apically acute or truncate ..... 5
- 5 Flagellomere I longer than broad; legs red to orange; paramere apically truncate; aedeagus with lateral projection and ventral expansion as wide or wider than dorsal column (Fig. 12) ..... *cobarensis* Kimsey
  - Flagellomere I as long as broad; legs brown; paramere apically acute; aedeagus without lateral projection and ventral expansion generally narrower than dorsal column (Fig. 11) ..... *cardaleae* Kimsey
- 6 Interantennal area with medial longitudinal carina and elevated, with V-shaped swelling or ridge (as in Fig. 5); frons strongly convex, one-third to one-half as wide as eye width in side view ..... 7
  - Interantennal area without medial longitudinal carina, not elevated and without V-shaped swelling or ridge; frons usually flattened, less than one-third as wide as eye width in side view ..... 9
- 7 Facial punctures irregularly spaced, 1-4 PD apart (Fig. 5); propodeum with punctures about 1 PD apart; clypeus black, without yellow markings; face without yellow band along inner eye margin; propodeum without lateral yellow spot ... *occidentalis* Kimsey
  - Facial punctures dense and nearly contiguous (as in Fig. 6); propodeal punctures contiguous above petiolar socket; clypeus half or more yellow; face with partial or complete yellow band along inner eye margin; propodeum with large lateral yellow spot ..... 8
- 8 Face with continuous yellow band along inner eye margin from clypeus to hindocelli; clypeus mostly yellow except for black mark near anterior tentorial pit ..... *moorensis* Kimsey
  - Face with yellow band along inner eye margin interrupted medially; clypeus about half yellow, largely black medially ..... *orarius* Kimsey



- 9 Propodeal punctures above petiolar socket striatiform, without polished interspaces and often between transverse ridges or striae ..... 10  
 – Propodeal punctures above petiolar socket circular, not striatiform with polished interspaces and without transverse ridges or striae ..... 11
- 10 Propodeum with large yellow medial spot; interantennal area broadly rounded, without medial carina ..... *piligaensis* Kimsey  
 – Propodeum without yellow medial spot; interantennal area with medial longitudinal carina ..... *austrinus* Kimsey
- 11 Frons convex in profile; scutal punctures 0.5–1.0 PD apart; facial punctures 0.5 PD apart or less ..... 12  
 – Frons flattened in profile; scutal punctures 1–3 PD apart; facial punctures usually 1–3 PD apart ..... 14
- 12 Propodeum highly polished, with tiny circular punctures separated by polished interspaces, punctures more than two PD apart ..... *nanus* Kimsey  
 – Propodeum not appearing polished, with large circular or striatiform punctures 0.5–1.0 PD apart ..... 12
- 13 Propodeal punctures striatiform; eye with incomplete yellow stripe along inner margin; ocellular distance less than 4 MOD wide ..... *theros* Kimsey  
 – Propodeal punctures circular; eye with complete yellow stripe along inner margin; ocellular distance more than 4 MOD wide ..... *aestus* Kimsey
- 14 Hypopygium apicomediaally notched or indented (Fig. 33); frons with punctures contiguous to 0.5 PD apart ..... *aquiloni* Kimsey  
 – Hypopygium apically rounded, margin convex (as in Fig. 32); frons with punctures 1 PD apart or more ..... 15
- 15 Propodeum without pale spots, or only with traces of lateral spot; paramere apically narrowly acute, apical half slender and almost digitate (Fig. 15) ..... *fuscatus* Kimsey  
 – Propodeum with yellowish medial and lateral spots; paramere subtriangular with broadly rounded or acute apex, apex not slender or digitate (as in Figs. 13, 21) ..... 16
- 16 Sternum I strongly bulging medially; clypeus with small punctures about 0.5 PD apart near dorsal margin, nearly impunctate elsewhere; frons punctures shallow, 1–3 PD apart ..... *pygmaeus* Turner  
 – Sternum I flattened medially; clypeus with contiguous small punctures near dorsal margin, becoming larger and 0.5–1.0 PD elsewhere; frons punctures clearly impressed, 0.5–1.0 PD apart ..... *caros* Kimsey

***Hathynnus aestus* Kimsey, new species**

Figs. 1, 8

*Male*.—Body length 7 mm. *Head*: clypeus with short, impunctate, medial longitudinal welt, clypeal punctures smaller on upper third than on frons, remainder only slightly smaller than on frons, punctures 0.5–1.0 PD apart; frons with punctures 0.5–1.0 PD apart, impunctate between eye and antennal socket, except band of small and nearly contiguous punctures right along eye margin; vertex punctures 0.5–

1.0 PD apart; clypeus greatest width twice length; interantennal distance 2.6 MOD wide; ocellular distance 4.8 MOD; flagellomere I as long as broad; flagellomere II 1.4× as long as broad; flagellomeres III–IV 1.5× as long as broad; flagellomere XI twice as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 2–3 PD apart; metanotum nearly impunctate; propodeal punctures circular and nearly contiguous, without transverse ridges or striae above petiolar socket; mesopleural

punctures nearly contiguous dorsally, with broad subventral impunctate band. *Metasoma*: terga and sterna finely shagreened, punctures obscure, 3–4 PD apart; epipygium with impunctate medial longitudinal band and irregular, large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 8): paramere broadly triangular, with rounded apex; volsella with large, acute ventral lobe, more than half as long as paramere; aedeagus with ventral expansion as wide as primary column; penis valves reaching apex of ventral aedeagal expansion. *Color*: black, with yellow and orange markings; face with yellow band along eye margin and ventral margin of clypeus, with yellow spot adjacent to each antennal socket; mandibles yellow basally, becoming reddish brown apically; gena with yellow spot behind eye margin and yellow band extending part way along posterior eye margin from mandible; pronotum with transverse anterior and posterior yellow bands; tegula yellow; scutum, scutellum and metanotum with large medial yellow spot; propodeum with small sublateral yellow spot; mesopleuron with anterior U-shaped yellow spot and posterior ovoid one; mid and hindcoxae with two dorsal longitudinal yellow bands; terga II–VI with lateral comma-shaped yellow mark; terga II–III reddish brown dorsally; sterna II–V with small yellow lateral mark; legs reddish brown with yellow mark near apex of fore and midfemora; wing membrane untinted, costa and stigma yellowish brown, rest of veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Western Australia: 5 km n Hopetoun, 27 Dec. 1994, 33°41.612S 120°11.244E, R. B. & L. S. Kimsey, ex *Eucalyptus*, WA122701 (PERTH).

*Etymology*.—The species name, *aestus*, refers to the presence of this wasp in the summer; Latin, masculine adjective.

*Discussion*.—This is one of eight species with a short, longitudinal medial clypeal ridge or welt. Among these species, *aestus*

most closely resembles *aquilonius* based on the closely punctate clypeus and frons, and penis valves more than two-thirds as long as aedeagus, and *nanus* based on the circular and not striatiform propodeal punctures and red legs. Additional diagnostic features include the ocellocular distance 4.8 MOD and propodeal punctures nearly contiguous medially.

*Hathynnus aquilonius* Kimsey,  
new species

Figs. 1, 9

*Male*.—Body length 5.5 mm. *Head*: clypeus with short longitudinal, impunctate, medial carina, punctures similar in size to those on frons, punctures contiguous to 0.5 PD apart; frons with punctures 1–4 PD apart between eye and antennal socket; vertex punctures irregular, 0.5–1.0 PD apart; clypeus greatest width twice length; interantennal distance 2.6 MOD wide; ocellocular distance 4.2 MOD; flagellomere I 1.2× as long as broad; flagellomere II 1.4× as long as broad; flagellomeres III–IV 1.6× as long as broad; flagellomere XI 2.3× as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 2–4 PD apart; metanotum nearly impunctate; propodeal punctures striatiform and contiguous to 0.5 PD apart; mesopleural punctures 0.5–1.0 PD apart below wing fossa, with subventral broad impunctate band. *Metasoma*: terga and sterna finely shagreened, punctures obscure, 3–4 PD apart; epipygium with impunctate medial longitudinal band, and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 9): paramere dorsal margin angulate subapically, with subacute apex; volsella with large, flat, round ventral lobe; aedeagus with ventral expansion narrower than dorsal column; penis valve longer than ventral expansion. *Color*: black, with yellow and orange markings; face with yellow mark along lower inner eye margin and along dorsal eye margin near hindocelli; mandible yellow, becoming reddish brown apically; posterior eye margin with

short interrupted yellow band along lower margin; pronotum with transverse anterior and posterior spots; legs dark brown becoming paler on tibiae and tarsi; propodeum with tiny posterolateral yellow spot; terga and sterna II–V with small lateral yellow spot; wing membrane untinted, costa and stigma yellowish brown, rest of veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Queensland: Carnarvon National Park, Mt. Moffatt, 24°52.26S 148°01.19E, Irwin & Gaimari, 22 Nov. 1995 (BRISBANE).

*Etymology*.—The name, *aquilonius*, refers to the most northerly distribution of this species relative to others in the genus; Latin, masculine adjective.

*Discussion*.—*H. aquilonius* shares the dense punctation of the clypeus and frons and long penis valves with *aestus*. The two species differ in coloration; *aquilonius* has fewer pale markings and lacks the complete pale band along the inner eye margin of *aestus*, a feature also seen in *fuscatus*, *theros*, *occidentalis* and *orarius*. Additional diagnostic features of *aquilonius* are the ocellular distance 3.8 MOD, paramere with angulate dorsal margin, and volsella with a large, ovoid ventral lobe.

*Hathynnus austrinus* Kimsey,  
new species  
Figs. 1, 10

*Male*.—Body length 4.5–6.0 mm. *Head*: clypeus with impunctate, longitudinal, medial welt reaching apex, punctures smaller than on frons, punctures 0.5–1.0 PD apart; frons with punctures 0.5–1.0 PD apart, impunctate between eye and antennal socket; vertex punctures 0.5–1.0 PD apart, dorsolaterally nearly impunctate; interantennal distance 2.3 MOD wide; clypeus greatest width 1.8× length; ocellular distance 3.8 MOD; flagellomere I 1.2× as long as broad; flagellomere II 1.6× as long as broad; flagellomeres III–IV 1.7× as long as broad; flagellomere XI twice as long as broad. *Mesosoma*: pronotal, scutal,

scutellar and metanotal punctures 4–6 PD apart; propodeal punctures circular and 0.5–1.0 PD apart; mesopleural punctures 1.0 PD apart, except impunctate in broad, subventral band. *Metasoma*: terga and sterna polished, punctures obscure, 4–6 PD apart; epipygium with impunctate medial longitudinal band, and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 10): paramere posterior margin strongly convex, with subtruncate apex; volsella ventral lobe broad, flat and apical angle subacute; aedeagus with ventral lobe about as broad as dorsal column; penis valve more than half as long as aedeagus. *Color*: black to brown, with pale yellow markings; face with yellow band along inner eye margin, with yellow spot adjacent to each antennal socket and clypeus submedially; mandible yellow basally becoming reddish brown apically; gena with short yellow band along lower posterior eye margin and oval mark behind upper eye margin; pronotum with transverse anterior and posterior yellow bands; scutum, scutellum and metanotum with large medial yellow spot; tegula yellow; mesopleuron with large U-shaped yellow anterior spot and posterior ovoid one; propodeum with sublateral yellow spot; coxae with one or two longitudinal dorsal yellow bands; femora basally dark brown, apically reddish brown or yellow; tibiae and tarsi reddish brown; terga II–VI with comma-shaped yellow lateral spot; sternum II–IV with small pale lateral spot; wing membrane untinted, costa and stigma brown, paler medially, rest of veins brown.

*Female*.—Body length 2–4 mm. *Head*: parallel-sided in front view to bulging dorsolaterally, with one long hair above each eye and eye-sized oval depression behind eye. *Mesosoma*: pronotal disk without medial sulcus; scutellum without anteromedial lobe; propleuron flat; forecoxae not separated by pit; metanotum obsolete. *Metasoma*: pygidium with elongate, narrow and parallel-sided carina-enclosed



posterior plate, apex broadly truncate or medially notched, with lateral flap; sternum VI as long as broad, apex broadly rounded.

*Type material*.—Holotype ♂: Western Australia: 20 km w Esperance, 33°43'S 121°25'E, 27 Dec. 1994, R. B. & L. S. Kimsey, ex *Eucalyptus*, WA122706 (PERTH). Paratypes: 4♂♂, 7♀♀, same data as holotype (DAVIS, PERTH).

*Etymology*.—The name *austrius* refers to the southern distribution of the species in Australia; Latin, masculine adjective.

*Discussion*.—This species is one of four, including *occidentalis*, *moorensis* and *orarius* that have a strongly developed longitudinal clypeal carina. Unlike the first two species, *austrius* does not have the interantennal area elevated with a V-shaped carina or ridge, and the propodeal punctures are circular and separated, not striatiform and contiguous. Other diagnostic features of *austrius* include the paramere with an angulate dorsal margin and subtruncate apex, and aedeagus with broad ventral expansion. *H. austrius* differs from *orarius* in the less densely punctate frons and clypeus, and propodeal punctures circular and not striate.

*Hathynnus cardaleae* Kimsey,  
new species

Figs. 1, 11

*Male*.—Body length 4.0–4.5 mm. *Head*: clypeus without longitudinal medial carina or welt, punctures contiguous medially to 0.5 PD apart; frons with punctures 0.5–1.0 PD apart, becoming nearly impunctate between eye and antennal socket; vertex punctures 0.5–1.0 PD apart; clypeal apex equal to interantennal distance and 0.33 clypeal width; interantennal distance 2.8 MOD; clypeus greatest width 2.2× length; ocellocular distance 4 MOD; flagellomere I 1.2× as long as broad; flagellomere II 1.5× as long as broad; flagellomeres III–IV 1.4–1.6× as long as broad; flagellomere XI 1.7× as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 1–3

PD apart; metanotum nearly impunctate; propodeal punctures circular and 0.5–1.0 PD apart; mesopleural punctures nearly contiguous below wing fossa, sparser and 0.5–1.0 PD apart ventrally and posteriorly, with broad subventral impunctate band. *Metasoma*: terga and sterna finely shagreened, punctures obscure and 4–6 PD apart; epipygium with impunctate medial longitudinal stripe, and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 11): paramere subtriangular, with acute apex, dorsal margin strongly convex; volsellar dorsal lobe rounded, ventral lobe ovoid, with angled apex; aedeagus with ventral expansion as broad as or somewhat narrower than dorsal column; penis valve slender and less than half as long as aedeagus. *Color*: black, with whitish and brown markings; mandible whitish, with reddish apex; face with thin, whitish band along inner eye margin extending dorsally toward, but not reaching, hindocellus; posterior eye margin with whitish band extending nearly halfway up eye and small spot above; pronotum with whitish band along anterior and posterior margins; tegula brown; scutum with ovoid whitish spot between notauli; scutellum with triangular medial spot and smaller anterolateral one; metanotum whitish medially; propodeum with whitish lateral spot; mesopleuron with irregular anterior whitish spot; coxae, mid and hindfemora dark brown; forefemur dark brown, with brownish yellow apex; rest of legs brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Australian Capital Territory: Canberra, 4–10 Jan. 1999, Wharton & Woolley, malaise trap (CANBERRA). Paratype, 1 ♂, same data as holotype (COLLEGE STATION).

*Etymology*.—The species is named in honor of Jo Cardale who has made so much of this research possible.

*Discussion*.—*H. cardaleae* resembles *cobarensis* and *rubromaculatus* based on the lack of a clypeal carina, frons punctures



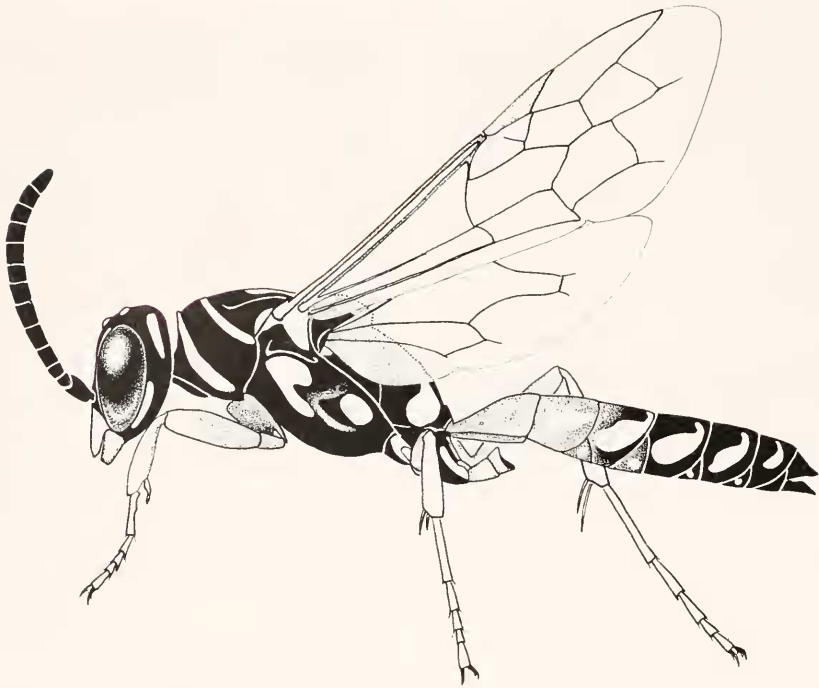


Fig. 2. Side view of male *Hathygnus cobarensis* Kimsey, with closest hindleg removed.

less than 2 PD apart, flagellomere III less than  $1.8\times$  as long as broad, propodeum with circular punctures, paramere with acute apex and penis valves long and slender. It differs from these species in having brown legs (not red), propodeal punctures generally less than 1 PD apart, clypeus without yellow markings, ocellocular distance 4 MOD wide and clypeus about twice as broad as long. The type specimens are darkly colored, resembling *fuscatus*, which differs in having a well-developed clypeal carina.

*Hathygnus cobarensis* Kimsey,  
new species  
Figs. 1, 2, 12

*Male*.—Body (Fig. 2) length 5.0–6.5 mm. *Head*: clypeus with longitudinal medial welt becoming obsolescent on lower third of clypeus, punctures tiny and nearly contiguous medially to nearly impunctate laterally; frons with punctures 1–3 PD apart becoming nearly impunctate between eye and antennal socket; vertex punctures 1–4

PD apart; clypeus greatest width  $3.2\times$  length; ocellocular distance 4 MOD; flagellomere I as long as broad; flagellomere II  $1.6\times$  as long as broad; flagellomeres III–IV  $1.7$ – $1.8\times$  as long as broad; flagellomere XI  $1.8\times$  as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 2–5 PD apart; metanotum nearly impunctate; propodeal punctures 0.5–1.0 PD apart; mesopleural punctures 0.5–1.0 PD apart below wing fossa, becoming sparser ventrally and posteriorly. *Metasoma*: terga and sterna finely shagreened, punctures obscure, 4–6 PD apart; epipygium with impunctate medial longitudinal stripe, and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 12): paramere subtriangular, with truncate apex; volsella dorsal lobe bilobate, ventral lobe elongate, with sharply angled apex; aedeagus with ventral expansion as broad as or broader than dorsal column; penis valve slender and more than two-thirds as long as aedeagus. *Color*: black, with yellow and orange markings; clypeus yellow,

with partial medial longitudinal black stripe and dorsal margin black between tentorial pits; mandible yellow, with reddish apex; face with yellow band along inner eye margin extending dorsally toward, but not reaching hindocellus, and large yellow spot above and between eye and antennal socket, some specimens with tiny yellow spot in middle of vertex; posterior eye margin with yellow band extending nearly halfway up eye and elongate dorsal yellow spot; pronotum with yellow band along anterior and posterior margins; tegula yellow on inner half; scutum with large rectangular yellow spot between notauli and yellow band along subventral margin; scutellum with large medially lobed medial spot and smaller anterolateral one; metanotum yellow medially and along anterior margin; propodeum with large yellow lateral spot extending toward midline; mesopleuron with large irregular anterior and oval posterior yellow spots; mid and hindcoxae yellow dorsally; fore and midfemur orange, yellow apicoventrally, hindfemur orange, tibiae inner surface orange, outer surface yellow; foretarsi red; mid and hindtarsi dark brown; tergum I red becoming black basally; sternum I black, segments II–III reddish; segments IV–V dark brown to black, terga II–VI with comma-shaped lateral yellow spot, sterna with small apicolateral yellow spot; wing membrane untinted, costa and stigma orange, rest of veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: New South Wales: 180 km w Cobar, 4 Nov. 1992, L. S. and R. B. Kimsey (SYDNEY). Paratypes, 3♂♂, same data as holotype; 1♂, same data as holotype, except 35 km s Cobar (DAVIS, SYDNEY).

*Etymology*.—The species name, a noun in apposition, refers to the closest town, Cobar, to the collection sites of the type series.

*Discussion*.—*H. cobarensis* and *pygmaeus* are the largest bodied species of *Hathyn-*

*nus*, but have few other similarities. A number of species, including *cobarensis*, *rubromaculatus* and *striatus*, lack a medial clypeal carina and are sparsely punctate, with the clypeal punctures well separated and the propodeal punctures circular and separated, not striatiform nor contiguous. The male genital capsule is distinctive in *cobarensis*, with a basally very broad and apically truncate paramere, aedeagus with ventral expansion almost twice as wide as dorsal column, and slender dorsally bilobate volsella. This species can be readily separated from other species lacking a clypeal carina by the male genitalia.

#### *Hathynus earos* Kimsey, new species

Figs. 1, 13

*Male*.—Body length 3–4 mm. *Head*: clypeus with longitudinal, medial carina, punctures slightly smaller than on frons, punctures 0.5–1.0 PD apart dorsally becoming nearly impunctate laterally; frons with punctures 1–3 PD apart becoming impunctate between eye and antennal socket; vertex punctures 1–3 PD apart; clypeus greatest width 2.5× length; inter-antennal distance 2.3 MOD wide; ocellular distance 4 MOD; flagellomere I as long as broad; flagellomere II 1.4× as long as broad; flagellomeres III–IV 1.5× as long as broad; flagellomere XI 2.3× as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 1–2 PD apart; metanotum impunctate; propodeal punctures striatiform and contiguous; mesopleural punctures small and nearly contiguous below hindwing, becoming sparsely punctate anteriorly, posteriorly and ventrally, punctures 2–4 PD apart. *Metasoma*: terga and sterna finely shagreened, punctures obscure, 4–6 PD apart; epipygium with impunctate medial band, and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 13): paramere dorsal margin strongly convex, apex narrowly rounded; volsella ventral lobe rounded, dorsal lobe subrectangular, with acute apical angle; penis valve small and digi-

tate, less than half as long as aedeagus. *Color*: black to brown, with pale yellow markings; face with yellow band along inner eye margin, yellow spot above each antennal socket; clypeus yellow except medially; mandible yellow becoming reddish brown apically; gena with short yellow band along lower posterior eye margin and dorsal ovoid mark behind upper eye margin; pronotum with transverse anterior and posterior bands; scutum, scutellum and metanotum with large medial yellow spot; tegula yellow; propodeum with large yellow lateral spot; mesopleuron with large anterior U-shaped yellow spot and posterior ovoid one; mid and hindcoxa with two longitudinal dorsal bands; forelegs and rest of midleg reddish brown; hindtrochanter, femur and tibia reddish brown; tarsus brown; terga II–V with pale comma-shaped lateral mark; sternum II with small pale lateral mark; wing membrane untinted, costa and stigma brown, pale medially, rest of veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Victoria: 49 km e Murrayville, 16 Nov. 1992, L. S. & R. B. Kimsey, ex *Eucalyptus* (MELBOURNE).

*Etymology*.—The species name, *earos*, refers to the presence of this species in the spring months; Greek, noun in apposition.

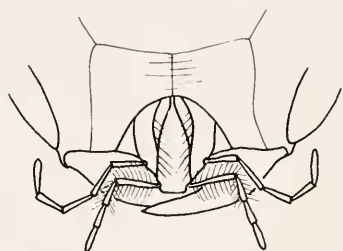
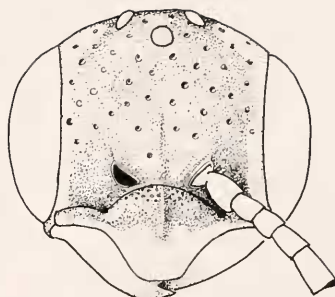
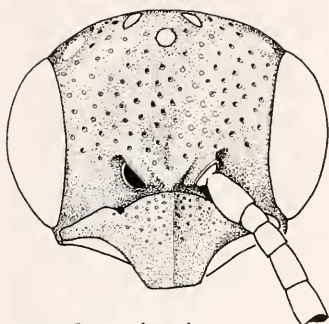
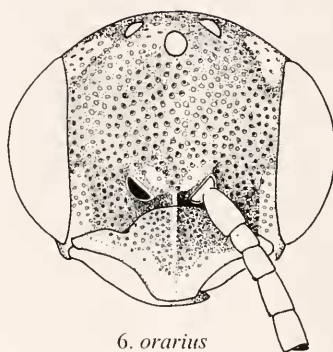
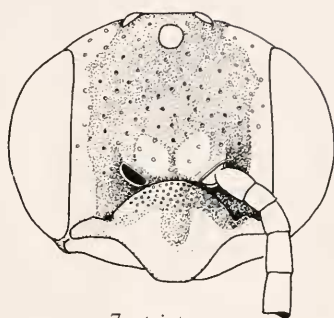
*Discussion*.—This species is closest to *uanus*, *fuscatus* and *theros*, based on the sparsely punctate clypeus, striatiform propodeal punctures and incomplete clypeal carina. Distinguishing features of *earos* include the very small penis valve, which is less than one-third the length of the aedeagus, clypeus more than twice as wide as long, paramere dorsal margin strongly convex and volsella with the dorsal part subrectangular.

*Hathynnus eyrensis* Kimsey,  
new species

Figs. 1, 14, 25, 26, 36, 28

*Male*.—Body length 3.5–5.0 mm. *Head*: clypeus without medial carina or welt,

punctures tiny, punctures 0.5–1.0 PD apart, sparser laterally; frons and vertex punctures much larger than clypeal ones, 1–3 PD apart, frons impunctate between eye and antennal socket; clypeus greatest width 2.2× length; ocellular distance 5 MOD; flagellomere I as long as broad; flagellomere II 1.3–1.4× as long as broad; flagellomeres III–IV 1.6–1.7× as long as broad; flagellomere XI twice as long as broad. *Mesosoma*: pronotum nearly impunctate, except along posterior margin punctures 2–3 PD apart; scutal punctures 1–3 PD apart; scutellar punctures 2–4 PD apart; metanotum impunctate; propodeal punctures contiguous to 0.5 PD apart and striatiform; mesopleuron punctures 0.5–1.0 PD apart, becoming sparser ventrally. *Metasoma*: terga and sterna finely shagreened, punctures obsolescent; epipygium with broad impunctate medial longitudinal band and laterally with sparse large punctures. *Genital capsule* (Figs. 14, 25, 26): paramere subtriangular, with acute, pointed apex; gonocoxal dorsal apex truncate; volsella with large ovoid dorsal lobe and ventral lobe narrow and nearly parallel-sided; aedeagus ventral expansion narrower than dorsal column; penis valve slender and less than half as long as aedeagus. *Color*: black to brown, with whitish markings; clypeus whitish, with partial medial longitudinal black stripe and dorsal margin black between tentorial pits; mandible pale, with reddish apex; face with whitish band along inner eye margin extending dorsally toward, but not reaching hindocellus and large whitish spot above and between eye and antennal socket, sometimes with tiny whitish spot in middle of vertex; posterior eye margin with whitish band extending nearly halfway up eye and elongate dorsal spot; pronotum with whitish band along anterior and posterior margins; tegula whitish on inner half; scutum with large whitish ovoid spot between notauli and whitish band along lateral margin; scutellum with large medially lobed whitish medial spot

3. *rubromaculatus*4. *nanus*5. *occidentalis*6. *orarius*7. *striatus*

Figs. 3-7. *Hathyuuus*, male heads. 3, Ventral view. 4-7, Front view, with partial right antenna.

and smaller anterolateral one; metanotum whitish medially and along anterior margin; propodeum with small, ovoid whitish lateral spot; mesopleuron with large irregular anterior and oval posterior whitish spots; coxae black, with small whitish apical spot, rest of legs yellowish brown; metasoma dark brown to black, terga II-IV or VI with whitish, comma-shaped lateral spot; wing membrane untinted, costa yellow, rest of veins brown.

*Female*.—Body length 2.5–4.0 mm. *Head*: ovoid, broader than long. *Mesosoma*: pronotal disk quadrate and strongly elevated above anterior collar, with 6–8 long setae and medial sulcus; scutum obsolescent; scutellum with anteromedial lobe; metanotum well-developed, broadly separating scutellum from propodeum; propodeum ovoid and evenly convex, with scattered long hairs; propleuron strongly bulging ventromedially; forecoxae broadly separated by large, deep medial pit (Fig. 28). *Metasoma*: tergum VI with long sublateral

carinae, area between carinae broadly oval with broadly rounded apex (Fig. 36); sternum VI about 3× as long as broad at apex, apex broadly rounded.

*Type material*.—Holotype ♂: South Australia: 20 km n Elliston, Talia Caves, 14 Nov. 1992, L. S. Kimsey (ADELAIDE). Paratypes: 19♂♂, 35♀♀, same data as holotype; 12♂♂, same data as holotype except 30 km n Elliston (ADELAIDE, CANBERRA, DAVIS).

*Etymology*.—The species name refers to the collection site of the type series on the Eyre Peninsula.

*Discussion*.—The smaller body size (3–6 mm) and dark coloration of male *eyrensis* shows a close resemblance to *striatus*. However, male *eyrensis* can be immediately distinguished by the acutely pointed paramere, lack of a clypeal carina, long penis valve, striatiform propodeal punctation, sparsely punctate frons, and large ocellular distance. Female *eyrensis* differ from other *Hathyuuus* by the ventrally



bulging propleuron, forecoxae broadly separated by a deep pit, and the pygidium ovoid, without long adjacent brushes of setae.

*Hathynnus fuscatus* Kimsey,  
new species

Figs. 1, 15

*Male*.—Body length 3.5 mm. *Head*: clypeus with short, longitudinal, medial welt, clypeal punctures smaller than on frons, dorsally 0.5–1.0 PD apart, nearly impunctate apically; frons with punctures 0.5–1.0 PD apart, impunctate between eye and antennal socket; vertex punctures 1–6 PD apart; clypeus greatest width 2.5× length; interantennal distance 2.3 MOD wide; ocellocular distance 4.3 MOD; flagellomeres I and II 1.1× as long as broad; flagellomeres III–IV 1.3× as long as broad; flagellomere XI 1.5× as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 1–2 PD apart; metanotum nearly impunctate; propodeal punctures circular and contiguous to 0.5 PD apart; mesopleural punctures contiguous below hindwing fossa, becoming 0.5–1.0 PD apart elsewhere. *Metasoma*: terga and sterna finely shagreened, punctures obscure, 4–6 PD apart; epipygium with impunctate medial longitudinal band, and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 15): paramere subtriangular, with narrowly acute apex; volsella slender, with elongate, ovoid dorsal and ventral lobes; aedeagus ventral expansion more than half width of dorsal column; penis valve broad and folliaceous. *Color*: black to dark brown, with few pale yellow or muddy whitish markings; vertex with pale mark between hindocellus and dorsal eye margin; mandible pale brown becoming darker toward apex; pronotum with pale transverse anterior and posterior bands; scutum, scutellum and metanotum with pale medial mark; tegula reddish; mesopleuron with small anterior and smaller posterior oval spots; propodeum with sublateral pale spot; legs

dark brown, becoming paler on tarsi; terga III–IV with pale brownish lateral mark; wing membrane untinted, veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Western Australia: 110 km nw Williams, 32°19'S 116°13'E, 15 Jan. 1995, R. B. & L. S. Kimsey, ex *Eucalyptus* (PERTH).

*Etymology*.—Among *Hathynnus* species, *fuscatus* is the most darkly colored, with minimal pale markings. The species name refers to this blackish coloration; Latin, masculine adjective.

*Discussion*.—This small, dark-colored species, with its partial clypeal carina, sparsely punctate frons and acute paramere resembles *nanus* and *eyrensis*, although *eyrensis* lacks a clypeal carina. Features that distinguish *fuscatus* from these and other species include the lack of pale maculation on the face and metasoma, dark brown legs, slender volsella and striatiform propodeal punctures.

*Hathynnus moorensis* Kimsey,  
new species

Figs. 1, 16

*Male*.—Body length 6 mm. *Head*: clypeus with prominent longitudinal, medial carina reaching apex, punctures slightly smaller than on frons and contiguous; subantennal sclerite with medial longitudinal carina connected to V-shaped swelling between antennal sockets; frons with punctures 0.5 PD apart, punctures much smaller between eye and antennal socket and 0.5 PD apart; vertex punctures 0.2–1.0 PD apart; clypeus greatest width 2.2× length; interantennal distance 1.8 MOD wide; ocellocular distance 3.5 MOD; flagellomere I 1.2 as long as broad; flagellomere II 1.6× as long as broad; flagellomeres III–IV 1.7× as long as broad; flagellomere XI 2.3× as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 0.2–0.5 PD apart; metanotum punctures 2–4 PD; propodeal punctures striatiform and contiguous; mesopleural punctures contiguous below wing fossa,

becoming sparser ventrally and posteriorly, with impunctate subventral band. *Metasoma*: terga and sterna finely shagreened, punctures obscure, 4–6 PD apart; epipygium with broad impunctate, medial, longitudinal band and irregular large punctures laterally, 0.5–1.0 PD apart, apex broadly translucent. *Genital capsule* (Fig. 16): paramere broadly triangular, with subacute apex; aedeagus with ventral expansion about as wide as dorsal column; penis valve small, digitate and less than half as long as aedeagus; volsella with apically rounded ventral and dorsal lobes. *Color*: black, with yellow and reddish brown markings; face with broad yellow band along inner eye margin; clypeus yellow; frons with V-shaped yellow mark between antennal sockets; gena with yellow band along lower posterior eye margin and large mark behind upper eye margin; pronotum with transverse anterior and posterior transverse yellow bands; scutum, scutellum and metanotum with large medial yellow spot; tegula yellow; mesopleuron with large irregular anterior yellow spot and posterior ovoid one; propodeum with ovoid lateral yellow spot and small medial one; terga II–VI with large lateral comma-shaped yellow spot; sterna II–V with small lateral yellow spot; coxae black, with yellow anterior or dorsal bands; fore and midfemora and tibiae reddish brown, with yellow markings; tarsi reddish brown; hindfemur, tibia and tarsus reddish brown; wing membrane untinted, costa and stigma yellowish brown, rest of veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Western Australia: 70 km n Gingin, Moore River National Park, 31°04.269S 115°44.328E, R. B. & L. S. Kimsey, 1 Jan. 1995, WA010104 (PERTH).

*Etymology*.—The species is named after the Moore River National Park, the type collection site.

*Discussion*.—This species has a well-developed clypeal carina, like *occidentalis*

and *austrinus* and a V-shaped carina between the antennal sockets, as in *occidentalis*. It also has the coarsely punctate frons and striatiform propodeal punctures seen in *orarius*. The configuration of the clypeal/interantennal carina and small dorsal aedeagal lobe are unique to *moorensis*.

#### *Hathynnus nanus* Kimsey, new species

Figs. 1, 4, 17

*Male*.—Body length 4 mm. *Head*: face (Fig. 4) very shiny; clypeus with impunctate, longitudinal, medial carina, punctures smaller than on frons, punctures 1–4 PD apart; frons with shallow punctures 2–4 PD apart, impunctate between eye and antennal socket; vertex punctures 2–4 PD apart; clypeus greatest width 2.3× length; interantennal distance 2.6 MOD wide; ocellocular distance 4.6 MOD; flagellomere I as long as broad; flagellomere II 1.5× as long as broad; flagellomeres III–IV 1.8× as long as broad; flagellomere XI 1.9× as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 2–6 PD apart; metanotum impunctate; propodeum nearly impunctate medially, punctures tiny and 1–6 PD apart; mesopleural punctures 1.0 PD apart below wing fossa, 4–6 PD apart ventrally and posteriorly. *Metasoma*: terga and sterna finely shagreened, punctures obscure; epipygium largely impunctate and polished, with few scattered punctures laterally. *Genital capsule* (Fig. 17): paramere subtriangular, with narrow, acute apex; aedeagus with ventral expansion slightly broader than dorsal column; penis valve about half as long as aedeagus; volsella ventral lobe large and ovoid, dorsal lobe much smaller and apically acute. *Color*: dark brown to black, with muddy pale yellow markings; face with pale band along inner eye margin, with small pale spot above antennal socket; ventral half of clypeus pale, mandible pale yellow becoming reddish brown apically; gena with pale band along lower half of posterior eye margin and elongate pale spot behind upper eye margin; pron-

otum with transverse pale posterior and anterior bands; scutum, scutellum and metanotum with pale medial spot; tegula yellowish brown; mesopleuron with anterior elongate pale spot and ovoid posterior one; propodeum with small posterolateral pale spot; legs brown becoming paler toward tarsi; terga II–VI with pale comma-shaped lateral spot; sterna II–IV with trace of pale lateral mark; wing membrane untinted, costa and stigma pale brown, rest of veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Western Australia: 8 km n Northampton, 27°41'S 114°41'E, 4 Jan. 1995, R. B. & L. S. Kimsey, WA0101402, ex *Eucalyptus* (PERTH).

*Etymology*.—This is the smallest of the *Hathynnus* species, thus the species name *nanus*, meaning little or dwarf; Latin, masculine adjective.

*Discussion*.—A number of *Hathynnus* species share the incomplete clypeal carina, sparse clypeal and frons punctation and circular propodeal punctures seen in *nanus*, including *fuscatus*, *theros* and *earos*. *H. nanus* can be distinguished from these and other species by the sparsely punctate face and propodeum, and greater ocellular distance of more than 4.5 MOD.

***Hathynnus occidentalis* Kimsey,  
new species**  
Figs. 1, 5, 18

*Male*.—Body length 4–6 mm. *Head* (Fig. 5): clypeus with prominent longitudinal, medial carina extending to clypeal apex, punctures smaller than on frons, 0.5–1.0 PD apart; frons with punctures 0.5–1.0 PD apart, nearly impunctate between eye and antennal socket; vertex nearly impunctate; clypeus greatest width 2.3× length; interantennal distance 2.4 MOD wide; ocellular distance 5.3 MOD from nearest eye margin; flagellomere I as long as broad; flagellomeres II–IV 1.5× as long as broad; flagellomere XI 1.7× as long as broad. *Mesosoma*: pronotal, scutum and scutellum impunctate medially; metanotum impunc-

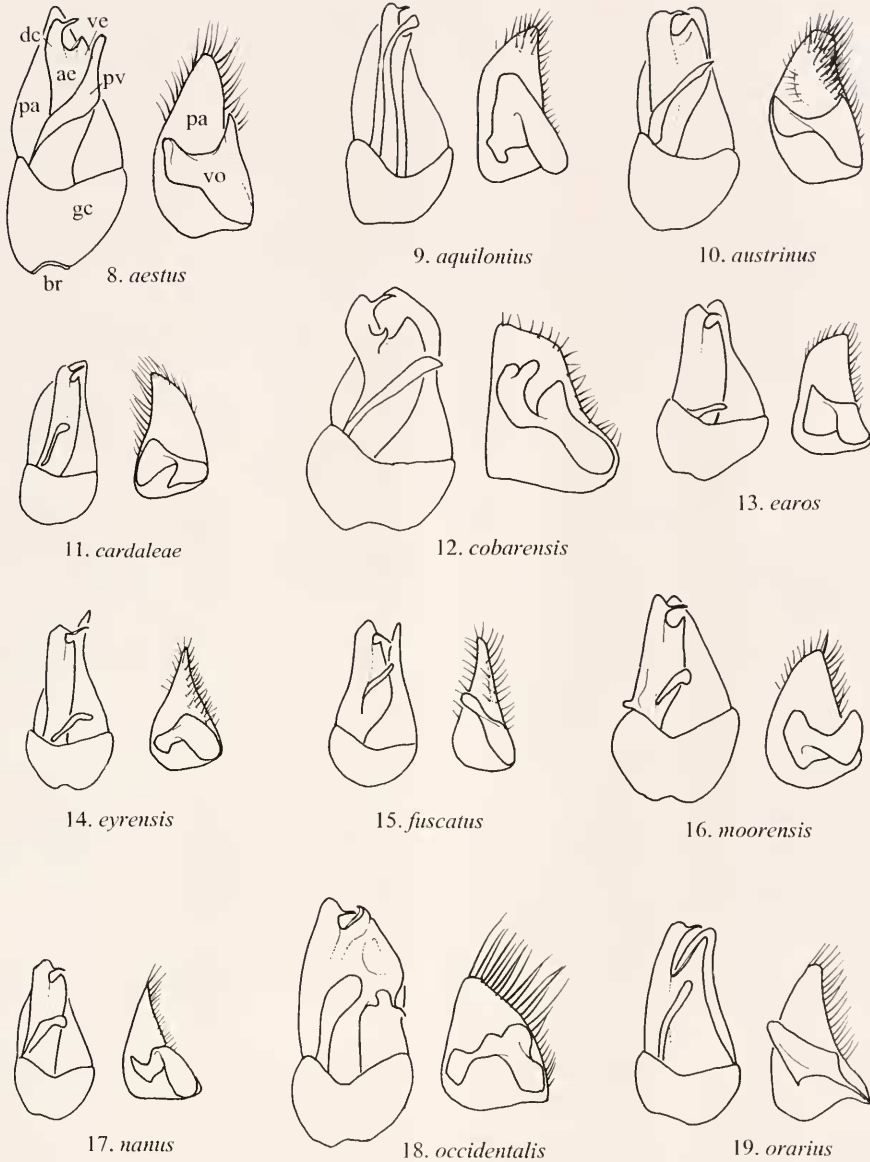
tate; propodeum shiny, punctures tiny and separated by 4–6 PD; mesopleural punctures 1–2 PD apart below wing fossa, mesopleuron becoming nearly impunctate ventrally and posteriorly. *Metasoma*: terga and sterna polished, punctures obscure; epipygium with impunctate medial longitudinal band and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 18): paramere broadly subtriangular, with convex ventral margin and rounded apex; aedeagus with ventral expansion elaborate, with ventral projection, and more than twice as wide as dorsal column; volsella ventral lobe almost dumbbell-shaped, dorsal lobe capitate; penis valve about half as long as aedeagus and apically capitate. *Color*: black, with yellow and reddish brown markings; face with small yellow spot between dorsal eye margin and hindocellus; mandible brown; pronotum with partial transverse anterior yellow band, interrupted medially, with posterolateral yellow mark; scutum with small posteromedial yellow spot; tegula yellow; scutellum and metanotum with medial yellow spot; trochanters and basal half of femora dark brown; rest of legs reddish brown; terga III–VI with elongate lateral yellowish spot; sterna III–V with small lateral ovoid yellow spot; wing membrane untinted, veins brown.

*Female*.—Unknown.

*Type material*.—Holotype ♂: Western Australia: Yallingup, 20 Dec. 1994, R. B. & L. S. Kimsey, WA122001, ex *Eucalyptus* (PERTH). Paratypes: 1 ♂, Yallingup, 22 Dec. 1979, R. M. Bohart, ex *Meliluca* (DAVIS); 1 ♂, Western Australia, 300 km n Bunbury, 30 Oct. 1982, W. F. Chamberlain (COLLEGE STATION).

*Etymology*.—The species name, *occidentalis*, refers to the western distribution of the species in Australia; Latin, masculine adjective.

*Discussion*.—This species shares the well-developed clypeal carina and V-shaped interantennal welt with *moorensis*. Other species with a well-developed clyp-



Figs. 8–19. *Hathynnus*, inner view of male genital capsule, with closest paramere removed (left), with inner surface of paramere showing volsella (right). Abbreviations are: ae = aedeagus, br = basal ring, dc = aedeagus dorsal column, gc = gonocoxa, pa = paramere, pv = penis valve, ve = aedeagus ventral expansion, vo = volsella.

eal carina are *austrinus* and *orarius*. Additional diagnostic characteristics include the incomplete inner eye margin yellow band (shared with *orarius*), nearly impunctate propodeum, and the ocellocular distance 5 MOD or wider.

***Hathynnus orarius* Kimsey, new species**  
Figs. 1, 6, 19

*Male*.—Body length 4.5–6.0 mm. *Head*: face (Fig. 6); clypeus with longitudinal, medial carina reaching apex, punctures slightly smaller than on frons and 0.5 PD



apart; frons with punctures 0.5 PD apart, sparser between eye margin and antennal socket; vertex punctures 1 PD apart; clypeus greatest width  $1.4\times$  length; interantennal distance 1.8 MOD wide; ocellular distance 3.8 MOD; flagellomere I 1.1 as long as broad; flagellomere II  $1.5\times$  as long as broad; flagellomere III  $1.3\times$  as long as broad; flagellomeres IV–XI lost. *Mesosoma*: pronotal and scutal punctures 1–2 PD apart; scutellar punctures 2–4 PD apart; metanotum impunctate; propodeal punctures striatiform and contiguous, between transverse ridges; mesopleural punctures dense and contiguous, with more sparsely punctate subventral band. *Metasoma*: terga and sterna finely shagreened, punctures obsolescent; epipygium with impunctate medial longitudinal band and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 19): paramere subtriangular, with dorsal margin concave and apex acute; aedeagus broadest basally, with ventral expansion about twice as wide as dorsal column; volsella ventrally tapering to acute apex, angulate apico-medially, dorsally subtriangular with rounded apex; penis valve slender and more than half as long as aedeagus. *Color*: black to dark brown, with yellow and reddish brown markings; face with yellow band along inner eye margin interrupted medially and with small yellow spot above antennal socket; clypeus with lower half yellow; mandibles yellow becoming reddish brown apically; gena with short yellow band along lower posterior eye margin and ovoid yellow spot behind upper eye margin; pronotum with transverse anterior and posterior yellow bands, anterior band interrupted medially; scutum, scutellum and metanotum with large yellow medial spot; tegula yellow; mesopleuron with anterior C-shaped to linear anterior yellow spot and ovoid posterior one; propodeum with ovoid posterolateral yellow spot; fore and midleg coxae brown (forecoxa with yellow ventral band), femora basally brown and apically yellow,

tibiae and tarsi yellow; hindleg orange, becoming brown on tarsi, coxa with dorsal yellow band; metasomal segments dark brown, except II and III reddish brown; terga II–VI with ovoid lateral yellow spot; sterna III–V with small ovoid lateral yellow spot; wing membrane untinted, veins brown, except costa basally yellow.

*Female*.—Unknown.

*Type material*.—Holotype ♂: New South Wales: 2 km w Wandell, 4–5 Nov. 1995, M. E. Irwin, D. K. Yates & D. Gaimari, coastal scrub heath,  $28^{\circ}45.22S$   $153^{\circ}25.40E$  (SYDNEY). Paratype ♂, same data as holotype (DAVIS).

*Etymology*.—The species name, *orarius* (= coastal), refers to the presence of this species in the coastal scrub of New South Wales; Latin, masculine adjective.

*Discussion*.—The well-developed clypeal carina aligns *orarius* with *austrinus*, *occidentalis* and *moorensis* as discussed under those species. It can be distinguished from these and other species by the combination of the closely punctate frons, densely striatiform propodeal punctures, eye with incomplete inner stripe, ocellular distance less than 4 MOD and interantennal distance about 1.8 MOD.

***Hathynnus piligaensis* Kimsey,  
new species  
Figs. 1, 20**

*Male*.—Body length 6 mm. *Head*: clypeus with short, impunctate, longitudinal, medial carina, smaller than on frons, punctures 0.2–0.5 PD apart; frons with punctures 0.2–0.5 PD apart, punctures tiny between eye and antennal socket and about 1 PD apart; vertex punctures 2–6 PD apart; clypeus greatest width  $2.1\times$  length; interantennal distance 2.8 MOD wide; ocellular distance 4.2 MOD; flagellomere I 1.3 as long as broad; flagellomere II  $1.5\times$  as long as broad; flagellomeres III–IV  $1.8\times$  as long as broad; flagellomere XI  $2.3\times$  as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 2–6 PD apart; metanotum nearly impunctate; pro-

podeal punctures circular and nearly contiguous; mesopleural punctures contiguous below wing fossa, becoming 1–2 PD apart ventrally and posteriorly, except for a broad impunctate band laterally. *Metasoma*: terga and sterna finely shagreened, punctures obscure, 2–4 PD apart; epipygium with impunctate medial longitudinal band and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 20): paramere ventral margin concave, with truncate apex; aedeagus with ventral expansion slightly more than half as wide as dorsal column; penis valve slender and about half as long as aedeagus; volsella longer than width of paramere, protruding dorsally, ventral lobe broad and flat, with acute apical angle, dorsal lobe ovoid, with acute apical angle. *Color*: black to dark brown, with yellow and orange markings; face with yellow band along inner eye margin, yellow spot above each antennal socket and yellow band along clypeal apical margin; gena with short band along lower posterior eye margin and ovoid spot behind upper eye margin; mandibles yellow becoming reddish brown apically; pronotum with transverse anterior and posterior yellow bands; scutum with large yellow medial spot; scutellum with bell-shaped medial and smaller lateral yellow spots; metanotum with medial and lateral yellow spots; mesopleuron with C-shaped anterior and ovoid posterior yellow spots; propodeum with large ovoid medial and lateral yellow spots; coxae with extensive yellow markings; fore and midleg: femora basally orange apically yellow, tibiae and tarsi orange; hindleg trochanters and tarsi brown, rest of leg orange; metasoma brown except segments II and III reddish medially, terga II–VI with lateral comma-shaped yellow mark; sterna II–VI with small lateral yellow spot; wing membrane untinted, veins brown, except costa yellow basally.

*Female*.—Unknown.

*Type material*.—Holotype ♂: New South

Wales: 35 km s Narrabri, Piliga Scrub State Forest, 2 Nov. 1992, R. B. & L. S. Kimsey (CANBERRA).

*Etymology*.—The species is named after the collection site in the Piliga Scrub State Forest.

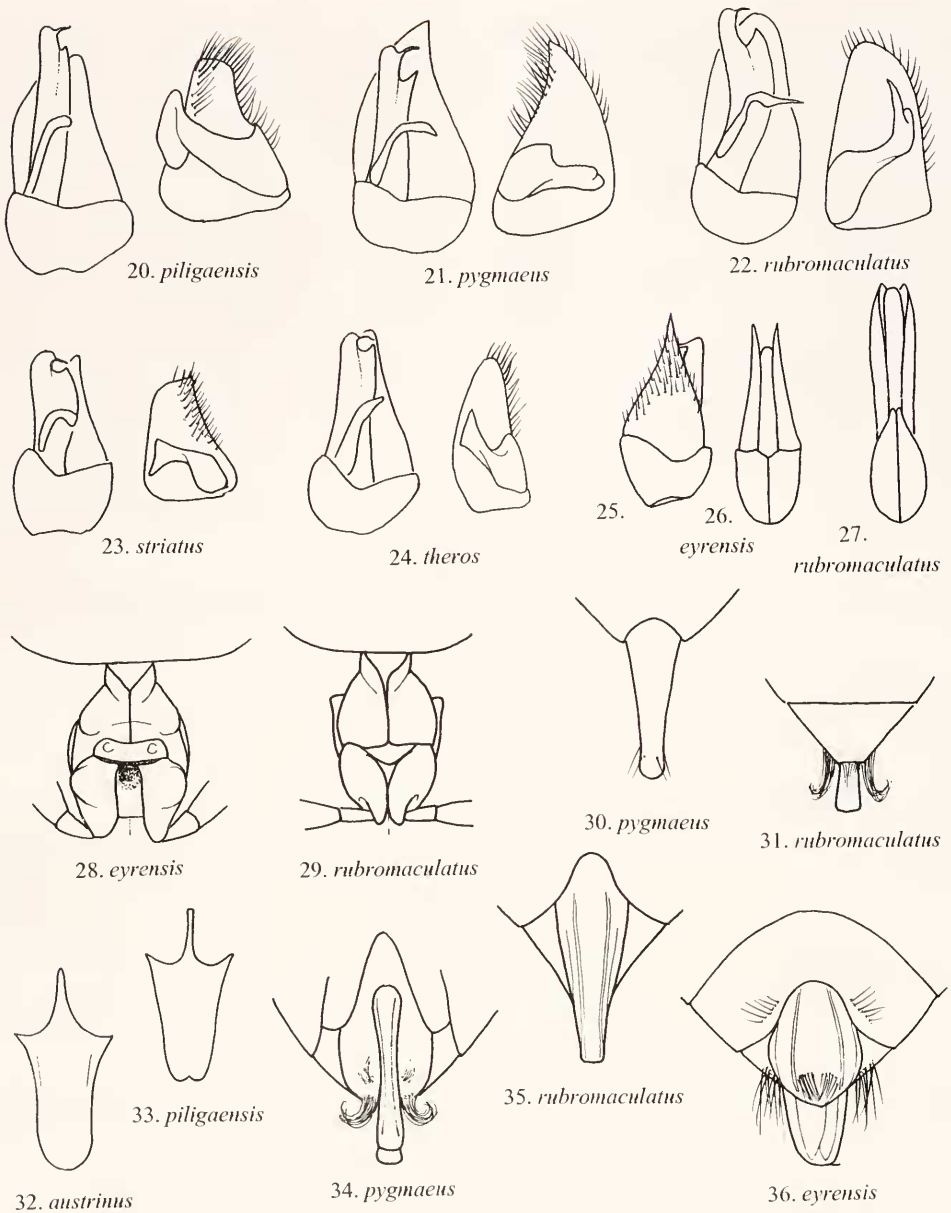
*Discussion*.—Four species, *pygmaeus*, *piligaensis*, *cardaleae* and *aquiloniis*, have an incomplete clypeal carina and frontal punctures 0.5–2.0 PD apart. *H. piligaensis* also has a medial propodeal spot like *pygmaeus*. It can be distinguished from these species by the combination of the circular propodeal punctures, volsella broader than the paramere, interantennal distance less than 3 MOD and ocellocular distance more than 4 MOD.

*Hathymmus pygmaeus* (Turner),  
new combination

Figs. 1, 21, 30, 34

*Thymmus pygmaeus* Turner 1908:117. Holotype ♂; Australia: Victoria (LONDON).

*Male*.—Body length 6–8 mm. *Head*: clypeus with partial longitudinal medial carina or welt, with punctures 0.5–1.0 PD sublaterally, nearly impunctate medially, frons and vertex with punctures 1–2 PD apart (punctures larger than on clypeus), nearly impunctate along eye margin; clypeus greatest width 2.7× length; interantennal distance 2 MOD; ocellocular distance 4 MOD; flagellomere I as long as broad; flagellomere II 1.4× as long as broad; flagellomeres III–IV 1.6× as long as broad; flagellomere XI 1.8× as long as broad. *Mesosoma*: pronotal and scutal punctures 1–3 PD apart, with highly polished interspaces; scutellar punctures 3–5 PD apart; metanotum nearly impunctate; propodeal punctures uniform, 0.5–1.0 PD apart, becoming striatiform laterally; mesopleural punctures nearly contiguous below hindwing, becoming larger and sparser anteriorly and ventrally, with impunctate subventral band. *Metasoma*: terga and sterna finely shagreened, nearly impunctate, punctures obscure; epipygium with im-



Figs. 20-36. *Hathyimus*. 20-24, Inner view of male genital capsule, with closest paramere removed (left), with inner surface of paramere showing volsella (right). 25-27, Male genital capsule: 25, Side view, 26-27, Dorsal view. 28-29, Ventral view of female prothorax. 30-31, Ventral view of female apical metasomal segments. 32-33, Male hypopygium. 34-36, Dorsal view of female apical metasomal segments.

punctate longitudinal medial band and broadly impunctate apex, laterally with irregular punctures. *Genital capsule* (Fig. 21): paramere subtriangular and apically acute, broadest at base; gonocoxal dorsoapical margin concave medially; aede-

gal ventral expansion one-half to two-thirds as broad as dorsal column; volsella apically narrowed and weakly bilobate, basally enlarged and rounded, lying along basal fourth of paramere; penis valve arched ventrally, slender and tapering api-

cally. *Color*: black, with yellow and reddish markings; head with yellow band encircling eye, except interrupted along upper posterior eye margin, yellow mark over each antennal lobe; clypeus yellow laterally; mandible yellow with red margin; pronotum with transverse anterior and posterior marginal bands; scutum with trilobate or quadrate medial yellow spot; scutellum with trilobate medial spot and lateral yellow one; metanotum yellow medially, with yellow lateral band along anterior margin; mesopleuron with large unilobate or bilobate anterior spot and with or without one or two smaller posterior yellow spots; propodeum with large longitudinal medial (sometimes absent) and circular lateral yellow spots; coxae with some yellow markings; legs red and yellow to brown, becoming browner on tarsi; wing membrane untinted; veins pale brown becoming very yellow in stigma; metasomal segment I blackish, sometimes red apically, segments II–III red to dark brown; segments IV–VI blackish, terga and sterna of segments II–VI with comma-shaped yellow lateral spot; segment VII black.

*Female*.—Body length 3–4 mm, same as *eyrensis* except: *Mesosoma*: pronotal disk without medial sulcus; scutellum without anteromedial lobe; propleura flat; forecoxae not separated by pit; metanotum obsolescent. *Metasoma*: pygidium elongate, narrow and parallel-sided, apex narrowly rounded or truncate (Fig. 34); sternum VI 6× or more as long as wide at apex, apex narrowly rounded or truncate (Fig. 30).

*Material studied*.—226♂♂, 79♀♀ from Western Australia: Toodyay, Brookton, 4 km n Porongorup, 78 km n Gingin, Northam, Bridgetown, 6 km w Gingin, 20 km w Esperance. Specimens were collected in the months of October through January.

*Discussion*.—Male *pygmaeus* are relatively large-bodied and brightly colored members of the genus, resembling those of *cobarensis* as discussed under that species. They also resemble *piligaensis* based on the

short penis valves, medial propodeal spot and well separated punctures on the frons. Additional diagnostic features of male *pygmaeus*, which will separate them from male *piligaensis* and other species, are the striatiform propodeal punctures, aedeagus with ventral expansion as wide as dorsal column, and apically acute paramere. Females have the long narrow pygidium and apical metasomal sternum seen in *rubromaculatus*, but lack the long mustache-like brush on either side of the pygidium typical of female *rubromaculatus*.

*Hathynnus rubromaculatus* (Turner),  
new combination

Figs. 1, 3, 22, 27, 29, 31, 35

*Thynnus rubromaculatus* Turner 1908:118. Syn-type ♂♂; Australia: New South Wales, Wattle Flat; Victoria (LONDON).

*Male*.—Body length 2.5–4.0 mm. *Head*: venter (Fig. 3); clypeus without medial longitudinal carina or welt, punctures tiny, 1–2 PD apart sublaterally, sparser medially; frons and vertex punctures 1–2 PD apart, punctures considerably larger than on clypeus, 2–3 PD apart along eye margin; clypeus greatest width 2.0–2.3× length; interantennal distance 3.0–3.2 MOD; ocellocular distance 3–4 MOD; flagellomere I as long as broad; flagellomere II 1.5–1.7× as long as broad; flagellomeres III–IV 1.7–1.9× as long as broad; flagellomere XI 2.0–2.2× as long as broad. *Mesosoma*: pronotal punctures 2–5 PD; scutal punctures medially 2–5 PD apart, laterally 1–2 PD apart, interspaces highly polished; scutellar punctures 3–6 PD apart; metanotum nearly impunctate; propodeal punctures uniform, 0.5–1.5 PD apart, slightly striatiform laterally; mesopleural punctures 0.5 PD below hindwing, becoming sparser anteriorly and ventrally, with impunctate subventral band. *Metasoma*: terga and sterna finely shagreened, nearly impunctate, punctures tiny and obscure; epipygium broadly impunctate medially and sparsely punctate laterally. *Genital capsule*



(Figs. 22, 27): paramere broadly rounded apically, broadest across basal half; aedeagus with ventral expansion as broad as dorsal column; volsella dorsal part bilobate, with inner lobe slender and acute, outer lobe large and broadly rounded, ventral part subovoid; penis valve slender and arched ventrally, apex narrowly elongate and subtriangular. *Color*: body black, with yellow and reddish brown markings; head with yellow band encircling eye, except interrupted along upper posterior eye margin and yellow mark over position of antennal lobe; clypeus yellow laterally; mandible yellow, with red margin; pronotum with transverse anterior and posterior marginal bands; scutum with oval medial yellow spot; scutellum with trilobate medial and lateral yellow spots; metanotum yellow medially, with yellow lateral band along anterior margin; mesopleuron with large uni- or bilobate anterior and with or without smaller posterior yellow spots; propodeum with large longitudinal medial (sometimes absent) and circular lateral yellow spots; coxae with some yellow markings; legs red and yellow to brown, becoming browner on tarsi; wing membrane untinted; veins pale brown becoming yellow on stigma; metasomal segment I blackish basally, sometimes red apically, segments II–III red to dark brown, terga and sterna with comma-shaped lateral yellow spot; segments IV–VI blackish, terga and sterna with comma-shaped yellow lateral spot; segment VII black.

*Female*.—Same as *eyrensis*, except for the following: Body length 2–3 mm. *Mesosoma*: pronotal disk not strongly elevated above collar, without medial sulcus; prothoracic venter (Fig. 29); scutellum without anteromedial lobe; scutum obsolescent. *Metasoma*: sternum V with long mustache-like tuft of setae on either side of sternum VI; sternum VI narrower than in *pygmaeus*, apex broadly truncate and strongly bent ventrally (Fig. 31), length

about 4× width of apex; pygidium narrower than in *pygmaeus* (Fig. 35).

*Material studied*.—196 ♂♂; specimens were studied from South Australia: Keith, Bondowie and Western Australia: Stirling Range; these were collected in the months of December and January.

*Discussion*.—Male *rubromaculatus* lack a medial clypeal carina, the frons punctures are 0.5–2.0 PD apart, and volsellar modifications are similar to those of *cobarensis* as discussed under that species. They can be distinguished from *cobarensis* males by the apically broadly rounded paramere (truncate in *cobarensis*), narrower aedeagal ventral expansion and propodeum with a medial yellow spot. Female *rubromaculatus* have a mustache-like brush subtending the pygidium, similar to that of *pygmaeus*.

#### *Hathynnus striatus* Kimsey, new species

Figs. 1, 7, 23

*Male*.—Body length 4 mm. *Head*: face (Fig. 7); clypeus without longitudinal, medial carina or welt, clypeal punctures as large as on frons, 1 PD apart; frons with punctures 2–3 PD apart, nearly impunctate between eye and antennal socket; vertex punctures 1–2 PD apart; clypeus greatest width 2.1× length; interantennal distance 2.4 MOD wide; ocellocular distance 3.8 MOD; flagellomere I 1.1× as long as broad; flagellomere II–VI 1.6× as long as broad; flagellomere XI 2.2× as long as broad. *Mesosoma*: pronotal, scutal and scutellar punctures 1–2 PD apart; metanotum impunctate; propodeal punctures contiguous and striatiform above petiolar socket and 1 PD apart dorsally; mesopleural punctures 0.5–1.0 PD apart below wing fossa, becoming sparser (1–3 PD apart) ventrally, anteriorly and posteriorly, with impunctate subventral band. *Metasoma*: terga and sterna finely shagreened, punctures obsolescent; epipygium with impunctate medial longitudinal band and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 23): paramere broadest basally, ventral margin

concave, dorsal margin strongly convex, apex appearing subtruncate; penis valve strongly arched and about half as long as aedeagus; aedeagus ventral expansion 1.0–1.53 as broad as dorsal column; volsella ventral lobe rounded, dorsal lobe subtriangular, with apical angle. *Color*: black, with pale yellow and orange markings; face with broad pale yellow band along inner eye margin, apical half or more of clypeus pale yellow; frons with yellow spot above each antennal socket; gena with short pale yellow band along lower posterior eye margin and ovoid pale yellow spot behind upper eye margin; pronotum with transverse anterior (interrupted medially) and posterior pale yellow bands; scutum, scutellum and metanotum with large medial pale yellow spot; mesopleuron with large bilobate anterior pale yellow spot and ovoid posterior one; propodeum with large ovoid lateral pale yellow spot; coxae with pale yellow dorsal spot; rest of legs orange, with tarsi brown; metasoma dark brown, except segments II–III reddish; terga II–VI with comma-shaped lateral pale yellow spot; sterna II–V with small lateral pale yellow spot; wing membrane untinted, veins brown, with base of costa pale, yellowish.

*Female*.—Unknown.

*Type material*.—Holotype ♂: South Australia: 25 km e Waikerie, 7 Nov. 1992, R. B. & L. S. Kimsey (ADELAIDE).

*Etymology*.—The species name, *striatus*, refers to the transversely striate punctures on the propodeum; Latin, masculine adjective.

*Discussion*.—Males of *cyrensis* and *striatus* share a number of modifications; both lack a clypeal carina, frons punctures are more than 3 PD apart, the paramere is apically slender and acute, and the propodeum has striatiform punctures. The most distinctive feature of *striatus* is the shape of the paramere, with the dorsal margin strongly convex and ventral margin concave.

*Hathynnus theros* Kimsey, new species  
Figs. 1, 24

*Male*.—Body length 4 mm. *Head*: clypeus with short longitudinal, medial ridge, not reaching apex, clypeal punctures smaller than on frons, 1 PD apart; frons with punctures 1–4 PD apart, impunctate between eye and antennal socket; vertex impunctate; clypeus greatest width 3× length; interantennal distance 2 MOD wide; ocellocular distance 3.8 MOD; flagellomere I 1.1× as long as broad; flagellomere II 1.4× as long as broad; flagellomeres III–IX lost. *Mesosoma*: pronotal, scutal and scutellar punctures 1–2 PD apart; metanotum impunctate; propodeal punctures circular and 0.5 PD apart; mesopleural punctures contiguous to 0.5 PD apart below hindwing, becoming sparser (1–2 PD apart) elsewhere, except for broad impunctate subventral band. *Metasoma*: terga and sterna finely shagreened, punctures obsolescent; epipygium with impunctate medial longitudinal band and irregular large punctures laterally, 0.5–1.0 PD apart. *Genital capsule* (Fig. 24): paramere slender, broadest submedially, with broadly rounded apex; aedeagus ventral expansion about as broad as dorsal column; volsella ventral lobe with rounded apical angle, dorsal lobe with acute apical angle. *Color*: black to dark brown, with pale yellow and reddish brown markings; face with yellow band along inner eye margin and small spot above antennal socket; gena with short yellow band along lower posterior eye margin and ovoid yellow spot behind upper eye margin; clypeus with small yellow spot laterally; pronotum with transverse anterior (interrupted medially) and posterior yellow bands and small yellow lateral spot; tegula yellow; scutum, scutellum and metanotum with large medial yellow spot; mesopleuron with irregular anterior and posterior ovoid yellow spots; propodeum with small posterolateral yellow spot and smaller medial one; mid and hindcoxae

brown, with small yellow dorsal stripe; fore and midfemora basally reddish brown apically yellow, tibiae and tarsi yellowish brown; hindfemur dark brown, rest of leg reddish brown; metasoma brown, except segments I–III reddish, terga II–VI with comma-shaped yellow mark; sterna IV and V with small lateral pale spot; wing membrane untinted, veins yellow.

*Female*.—Unknown.

*Type material*.—Holotype ♂: South Australia: Sherlock, 24 Dec. 1981, R. W. Thorp (ADELAIDE).

*Etymology*.—The name refers to the presence of the species in the spring months; *theros* = spring; Greek, noun in apposition.

*Discussion*.—The short clypeal carina and sparsely punctate frons are found in

*theros*, *caros*, *fuscatus* and *nanus*. *H. theros* can be distinguished from these species by the combination of the rounded paramere apex, eye with incomplete inner stripe, ocellular distance less than 4 MOD wide and clypeus about 3× as broad as long.

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